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ORIGINAL ARTICLE

The contributions of technical and allocative efficiency to the economic performance of European railways

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Abstract This paper provides an empirical analysis of the relative contributions of allocative and technical efficiency to the productivity performance of European railways over the period 1972 to 1999. A stochastic frontier approach is used to analyse the cost structure of the railway industry. We estimate a translog cost system in which allocative inefficiency is modelled through an exact relationship between the cost share equations and the cost function. To allow the estimation of such a model using the sample theory approach we assume that the share equation residuals represent deviations from first-order conditions and, therefore, that they represent exclusively allocative inefficiencies. The use of this simplifying assumption renders our analysis computationally tractable, but it could be inconsistent with the economic theory of duality and for that reason caution is required in interpretation of results. Acknowledging this caveat, we find that European railways have experienced significant cost increases due to inefficient behaviour, with a mean value of around 15%. In contrast to previous studies, however, our estimates indicate a larger role for allocative inefficiency, which accounts for around of a half of the total increase in cost inefficiency.

Keywords Cost function · Stochastic frontier · Efficiency · Productivity · Railway

JEL Classifications R41 · D24

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